

$$\textcircled{12} \quad x^2 - 10x + 21 = 0$$

$$(x-7)(x-3) = 0$$

$$x-7=0$$

$$x=7$$

$$x-3=0$$

$$x=3$$

-comp. sq.

-quad. form.

x^2

$$\textcircled{5} \quad 3(x-4)^2 + 30 = 0$$

~~$$ax^2 + bx + c$$~~

$$3(x-4)^2 = -30$$

$$\sqrt{(x-4)^2} = \sqrt{-10}$$

$$x-4 = \pm i\sqrt{10}$$

$$x-4 = i\sqrt{10}$$

$$\boxed{x = 4 + i\sqrt{10}}$$

$$x-4 = -i\sqrt{10}$$

$$\boxed{x = 4 - i\sqrt{10}}$$

$$\textcircled{1} x^2 + 16x + 59 = 0$$

$$\cancel{(x) (x)}$$

$$x^2 + 16x + \underline{64} = -59 + \underline{64}$$

$$\sqrt{(x+8)^2} = \sqrt{5}$$

$$x+8 = \pm\sqrt{5}$$

$$x+8 = \sqrt{5}$$

$$x+8 = -\sqrt{5}$$

$$x = -8 + \sqrt{5}$$

$$x = -8 - \sqrt{5}$$

$$\textcircled{2} \quad 5x^2 - 14x - 1 = 0$$

~~$$(5x)(x)$$~~

~~$$5x^2 - 14x + \underline{\quad} = 1$$~~

$$a = 5$$

$$b = -14$$

$$c = -1$$

$$x = \frac{7 \pm 3\sqrt{6}}{5}$$

$$\textcircled{3} \quad \frac{-4x^2 + 6x + 2}{2} = \frac{0}{2}$$

$$2(-2x^2 + 3x + 1) = 0$$

$$-2x^2 + 3x + 1 = 0$$

$$(\quad)(\quad) = 0$$

$$a = -2$$

$$b = 3$$

$$c = 1$$

$$\frac{3 \pm \sqrt{17}}{4}$$

$$\textcircled{4} \quad |x^2 + 4x - 2| = 0$$

$$(x+7)(x-3) = 0$$

$$x+7=0 \quad x-3=0$$

$$\textcircled{x = -7}$$

$$\textcircled{x = 3}$$

$$\cancel{a}x^2 + bx + c$$

$$\underline{ax^2 + bx + c} \quad (\quad) (\quad)$$

$$\left(\underline{\quad} + \underline{\quad} \right) \left(\overset{+}{\underline{\quad}} + \underline{\quad} \right)$$

$$x^3 + 8$$

$$\textcircled{1} 25x^4 - 9 = 0$$

$$(5x^2 + 3)(5x^2 - 3) = 0$$

$$5x^2 + 3 = 0$$

$$\frac{5x^2}{5} = \frac{-3}{5}$$

$$\sqrt{x^2} = \sqrt{-3/5}$$

$$x = \pm i\sqrt{3/5}$$

$$5x^2 - 3 = 0$$

$$5x^2 = 3$$

$$\sqrt{x^2} = \sqrt{3/5}$$

$$x = \pm \sqrt{3/5}$$

$$\textcircled{2} \quad 3x^2 - 6x + 3 = 0$$

$$3(x^2 - 2x + 1) = 0$$

$$3(x-1)(x-1) = 0$$

↙
 $x-1=0$

$$\textcircled{x=1}$$

$$\textcircled{4} (x^3 + x^2)(-4x - 4) = 0$$

$$x^2(x+1) - 4(x+1) = 0$$

$$(x+1)(x^2 - 4) = 0$$

$$(x+1)(x+2)(x-2) = 0$$

$$x+1=0$$

$$x = -1$$

$$x+2=0$$

$$x = -2$$

$$x-2=0$$

$$x = 2$$

$$\textcircled{3} \quad x^3 - 343 = 0$$

$\nwarrow (-7)^3$

$$(x-7)(x^2+7x+49) = 0$$

$(\quad) (\quad)$

$$\begin{array}{r|rrrr}
 7 & 1 & 0 & 0 & -343 \\
 & \downarrow & 7 & 49 & 343 \\
 \hline
 & & 1x^2 & +7x & +49 & 0
 \end{array}$$

$$x - 7 = 0$$

$$x = 7$$

$$x^2 + 7x + 49 = 0$$

$$a = 1$$

$$b = 7$$

$$c = 49$$

$$x = \frac{-7 \pm \sqrt{7^2 - (4 \cdot 1 \cdot 49)}}{2 \cdot 1}$$